Ex parte Koo

Patent Office Board of Appeals

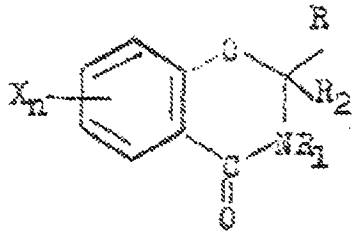
Patent issued June 21, 1966

Opinion dated Oct. 25, 1965

United States Patents Quarterly Headnotes

**PATENTS**
**[1] Patentability-Composition of matter (§ 51.30)**
Rejection is not on firm ground since basic nucleus of neither reference is similar to applicant's benzoxazinones; therefore, it would seem difficult to predict effect of substituting pyridyl for phenyl in different nucleus; although pyridine and benzene are similar in many respects, effect of their interchange in instant complex nucleus could not be foretoid inasmuch as there is little predictability in this art.

**PATENTS**
**Particular patents-Benzoxazinone Derivatives**
3,257,396, Koo, Certain 1, 3-Benzoxazinone Derivatives, claims 1 to 7 of application allowed.



wherein R and R sub1 are members of the group consisting of hydrogen and lower alkyl

R sub2 is taken from the group consisting of 2-pyridyl, 3-pyridyl, and 4- pyridyl,

X is selected from the group consisting of hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl, amino, nitro and lower alkylenedioxy

n is an integer of from 1 to 3

and the non-toxic, pharmaceutically acceptable acid addition salts thereof.

*131 Appeal from Group 120.

Application for patent of John Koo, Serial No. 201,336, filed June 11, 1962. From decision rejecting claims 1 to 7, applicant appeals (Appeal No. 288-35). Reversed.

Karl F. Jorda, Yonkers, N. Y., for applicant.

Before Asp and Behrens, Examiners in Chief, and Vertiz, Acting Examiner in Chief.

Asp, Examiner in Chief.

This is an appeal from the final rejection of claims 1 through 7, all the claims in the case.

Claim 1 is reproduced as illustrative:

1. A compound selected from the group consisting of derivatives of 2, *132 3-dihydro-1, 3-benzoxazinones of the formula

The references relied upon are:

Harvill et al. 2,470,085 May 17, 1949

Cusic 2,532,292 Dec. 5, 1950

Ohnacker et al. 2,943,087 June 28, 1960

Bernthsen et al., "Organic Chemistry", 1931 Ed., pages 567-571 (Blackie)

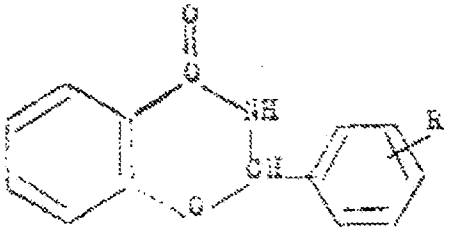
Sidgwick, "Organic Chemistry of Nitrogen", 1937 Ed., pp. 516-617, 522-523 (Oxford)

Fieser et al., "Organic Chemistry" 3rd Ed., pp. 796, 806-810 Reinhold (1956)

On remand the examiner further cited:

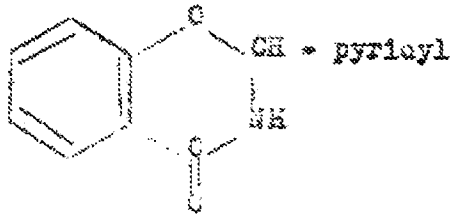
Burger, "Medicinal Chemistry", p. 72-78, 1960

The claims on appeal are directed to certain pyridyl-substituted-2,3-dihydro-1,3-benzoxazinones stated to possess significant CNS depressant activity. The copied claim contains the generic formula for this class of compounds.



wherein R is hydrogen or methoxy.

It will be seen that this differs from one of appellant's simplest compounds in having a phenyl




The examiner considered it obvious for a chemist of ordinary skill in the art to substitute a pyridyl group for the phenyl group in the above Ohnacker et al. compound because of the many analogies which exist between pyridine and its derivatives and benzene and its derivatives as established by the textbooks and by the Harvill et al. and Cusic patents in therapeutic compounds.

[1] The rejection, in our opinion, does not appear to be on firm ground. The basic nucleus of either the Harvill et al. or Cusic compounds bears not the remotest similarity to appellant's benzoxazinones. It would therefore seem difficult to predict the effect of substituting pyridyl for phenyl in this entirely different nucleus. It is true, as indicated by the texts, that pyridine and benzene are similar in many respects. But considering that there is little predictability in this art the effect of their interchange in the instant complex nucleus could hardly be foretold.

Claims 1 through 7 stand rejected as unpatentable over Ohnacker et al. in view of Cusic, Harvill et al., Bernthsen et al., Sidgwick and Fieser et al. The last three of these are textbook citations indicating a general similarity between benzene and pyridine and their simple derivatives. Cusic and Harvill et al. are secondary references alleged to establish the interchangeability and equivalence of the phenyl and pyridyl groups in compounds exhibiting CNS depressant activity. The primary reference, Ohnacker et al., acknowledges, by reference to a publication by Horrom et al. in Journal American Chemical Society, Vol. 72, page 721, 1950, the following compound:

substituent instead of a pyridyl substituent in the 2-position of the benzoxazinone. The formula for appellant's compound is:

Nor do we regard Cusic as even teaching that his compounds have CNS depressant activity and Harvill et al. in disclosing that their compounds are sedatives and anesthetics do not necessarily or unequivocally suggest CNS depressant activity. We consider both references to be weak in respect to supporting this aspect of the rejection. The same is true of the primary reference, *133 Ohnacker et al. Reference to the original Horrum et al. article establishes that the phenyl substituted benzoxazinone has only mild analgesic activity of the same order as salicylamide and that the hypnotic activity in mice mentioned by Ohnacker et al. in column 1, line 64 refers only to the p-dimethylaminophenyl derivative which was quite toxic and therefore of little therapeutic utility.

In his answer on remand the examiner sought to reinforce his position on the obviousness of substituting pyridyl for phenyl in the Ohnacker et al. compound by citing a passage from Burger's "Medicinal Chemistry" alleged to establish that these groups are recognized to be equivalent bioisosteres. Consideration of the entire discussion in Burger indicates that despite similarity of action of alleged bioisosteres in certain cases, the opposite or antagonistic effects were exhibited in others. This again illustrates the low degree of predictability in this art. It is our conclusion from a consideration of the record before us that the modification made by appellant would not be obvious and that the rejection should not be sustained.

The decision of the examiner is reversed.

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